D500X USER'S MANUAL

Firmware version 2.1.3

The D 500X is an ultrasound recording unit intended for long-term, unattended recording of bat calls. The recorder is equipped with four slots for CF cards. The triggering system allows the device to start recording as a sound is detected. The recording length can be selected in steps from 0.3 up to 20 seconds. In order not to fill the card too fast at locations with high activity, a minimum time between two recordings can be applied. The recorder is normally operated in a low-power mode with no pre-trigger (i.e. the recording starts as the sound exceeds the chosen threshold level), but both pre-and post-trigger functions are available in the standard (not low-power) mode.

Some of the features of the D500X are:

- Built-in electret microphone
- Jack for external microphone
- Powered either from 4 AA cells (internal) or external batteries/power supply
- Timer to turn the unit on/off at desired intervals
- Weather-protected housing (built-in microphone requires some protection)
- Size: 165 x 170 x 53 mm, rugged aluminium housing
- Sampling rates: 44.1 kHz, 300 kHz and 500 kHz (optimized for 500 kHz)
- ADC resolution: 16 bits
- Selectable high-pass filter to attenuate low frequency signals
- Optional external trigger input jack
- Time/date stamped sound files

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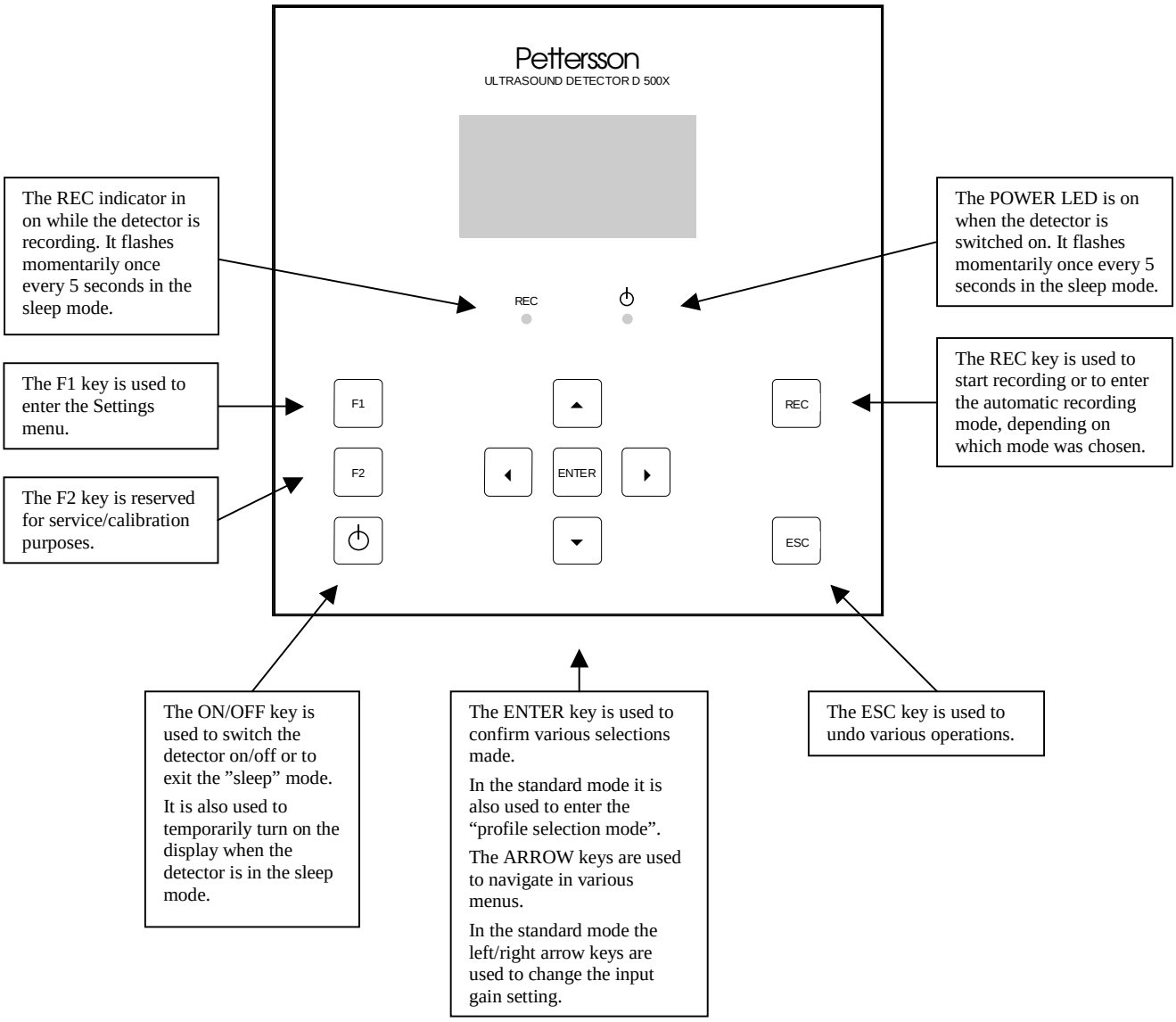
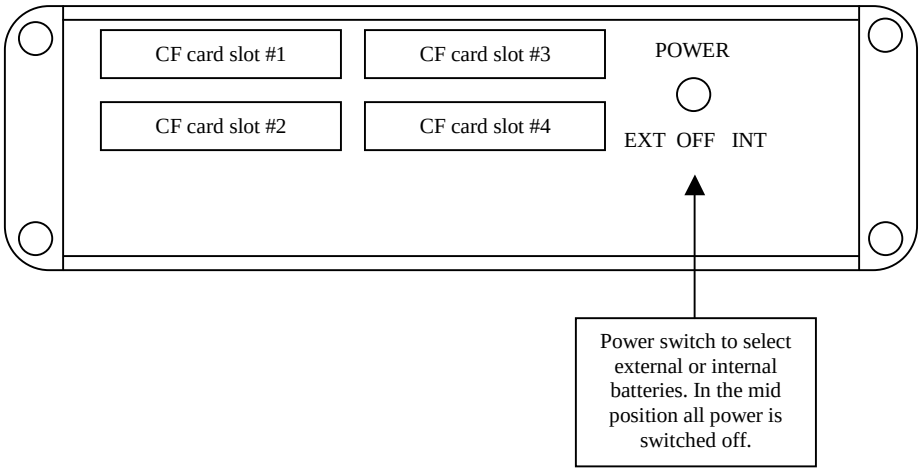
Top panel overview

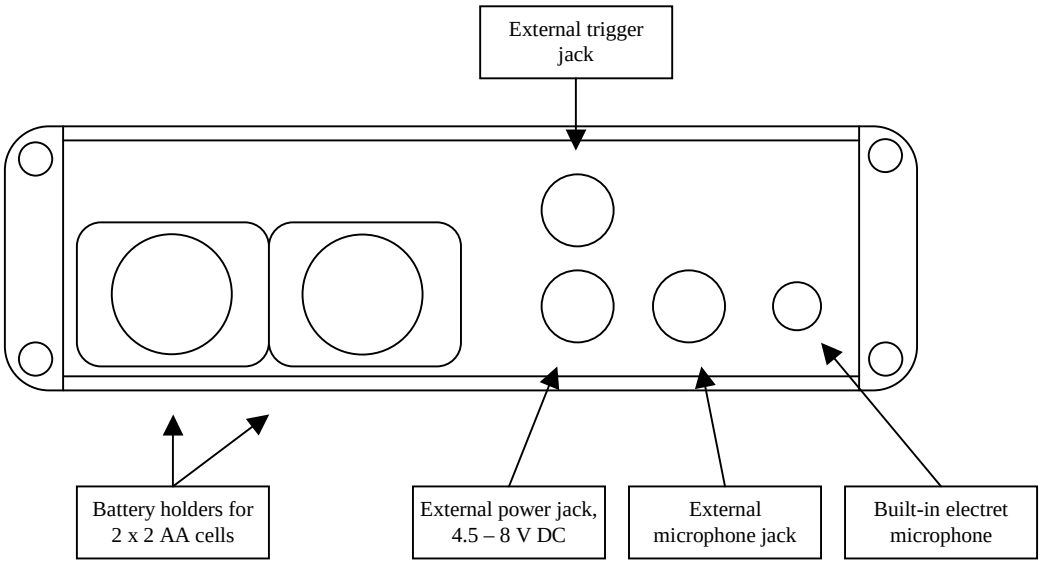

Pettersson
ULTRASOUND DETECTOR D 500X
REC
F1
F2
ENTER
REC
ESC
The REC indicator in on while the detector is recording. It flashes momentarily once every 5 seconds in the sleep mode.
The F1 key is used to enter the Settings menu.
The F2 key is reserved for service/calibration purposes.
The POWER LED is on when the detector is switched on. It flashes momentarily once every 5 seconds in the sleep mode.
The REC key is used to start recording or to enter the automatic recording mode, depending on which mode was chosen.
The ON/OFF key is used to switch the detector on/off or to exit the ”sleep” mode.
It is also used to temporarily turn on the display when the detector is in the sleep mode.
The ENTER key is used to confirm various selections made.
In the standard mode it is also used to enter the “profile selection mode”.
The ARROW keys are used to navigate in various menus.
In the standard mode the left/right arrow keys are used to change the input gain setting.
The ESC key is used to undo various operations.

CF card panel overview

The protection cover must be removed to access the power switch and CF card slots.

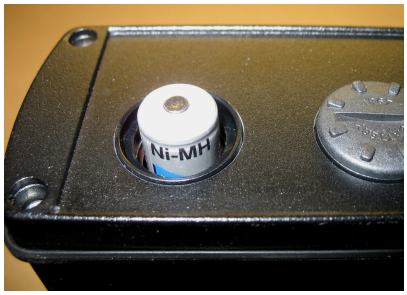

CF card slot #1
CF card slot #3
POWER
CF card slot #2
CF card slot #4
EXT OFF INT
Power switch to select external or internal batteries. In the mid position all power is switched off.

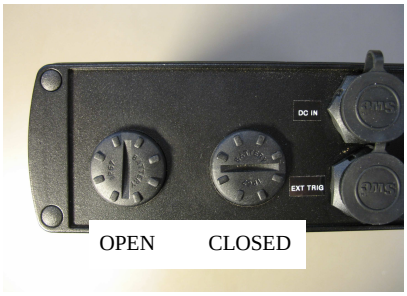
Microphone panel overview


External trigger jack
Battery holders for 2 x 2 AA cells
External power jack, 4.5 – 8 V DC
External microphone jack
Built-in electret microphone

Powering the D500X

The D500X can be powered either from internal batteries or from external batteries/power supply. In the case of internal batteries, 4 AA cells are used. Alkaline batteries or rechargeable NiMH cells are recommended – please note the polarity as indicated in the battery holders! To open the battery cap, turn the cap 90 degrees counter-clockwise.



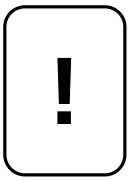


An external battery of 4.5-8 V DC can also be connected to the DC jack using a cable available from Pettersson. The Main Power switch (INT/EXT) is used to select internal or external supply. Setting it to the mid position turns off both the internal and external batteries.

To switch the unit on, press the ON/OFF key briefly and then press/hold it for a few seconds. To turn it off press the ON/OFF key and confirm by pressing the ENTER key as shown on the display. The detector will be turned on without using the ON/OFF key when the Main Power switch is activated.

In order to constantly maintain power to the real-time clock and some other parts of the detector, a small lithium battery is incorporated in the detector. After several years of use, this battery has to be replaced. Please contact Pettersson for more information about this.

Caution. *Carefully note the polarity of the batteries and/or the external power supply. Reverse polarizing the supply voltage as well as exceeding the maximum voltage may cause permanent damage to the detector!*



Battery handling precautions. *Incorrect use or handling of the batteries can cause them to leak or burst and create the danger of fire and personal injury as well as damage to the detector.*

Remove the batteries from the D500X if you do not plan to use it for more than two weeks.

Never recharge batteries, never allow direct connection between two ends of a battery and never try to take batteries apart.

Do not expose batteries to direct heat or dispose of them by burning. Doing so can create the danger of explosion.

Never mix batteries of different types.

Dead batteries are susceptible to leakage, which can cause serious damage to the D500X. Remove batteries from the detector as soon as you notice they are dead.

Using the D500X for the first time

Make sure that batteries have been installed and that at least one FAT32 formatted CF card has been installed. The cards must be installed in the slots in rising order, starting with CF card slot #1.

Caution. *Always follow the instructions supplied with the CF card you are using. Specifically, always switch off the power to the D500X using the INT/EXT Power switch before removing or inserting a CF card. Never switch the power off or plug/unplug external DC power while the D500X is accessing the CF card, i.e. while recording, while upgrading the firmware or while the detector is booting. Doing so can cause loss of recorded files and/or corruption of the CF card. When the display shows READY (see picture below), it is safe to turn the power off.*

Be careful not to drop any small objects into the housing through the CF card slots. They can cause damage to the CF card holder pins and metal objects may cause a short circuit that can damage the detector.

To turn the detector on, set the Power switch to the INT or EXT position depending on if you are using internal or external batteries. During start-up, status messages will be shown on the display and a list of the installed CF cards will appear. This may take a few tens of seconds, depending on the size and number of CF cards. Press ENTER to continue to the "D500X main screen":

The sampling frequency, pre-trig time and recording length is shown in the upper section. The full profile data is displayed if the ENTER key is pressed.

The mid section shows the currently used CF card, file name (with the wav extension excluded) and the remaining card space.

The lower section of the screen contains indicators for the signal level, total remaining CF card space (on all cards) and battery voltage. From firmware version 2.1.1, instead of a battery status bar, the numerical value of the battery voltage is displayed. The date and time are also shown.

To avoid distorting the signal, the level indicator ("dB") should be kept below maximum (the right-most segment) by adjusting the input gain.

First adjust the Input Gain (volume) control by pressing the left/right arrow keys. The "dB indicator" will show the signal level. The gain should be adjusted to keep the dB indicator below maximum reading.

The D500X can make recordings in the manual mode, in which the REC button is pressed to start the recording or in the automatic mode, in which the detector starts recording as soon as an ultrasound of sufficient loudness and duration is detected.

To make a “manual” recording, select one of the profiles with that recording mode, e.g. “Profile 8”. To enter the profile selection mode, press ENTER and use the left/right arrow keys to select the desired profile. Press ENTER again to confirm the selection. Press REC to start recording. Pressing REC a second time will interrupt the recording. If a profile with a predetermined recording time has been chosen, the recording will stop automatically when this time interval has elapsed.

Usually, the D500X is used in the automatic recording mode and to test this mode, select e.g. “Profile 2”. At least one timer has to be enabled in order for this mode to work so if this has not already been done press F1 and “3 – TIMER ON/OFF” to do so. Please refer to the section “Changing the settings” for more information on this. When the REC key is pressed the Input Gain/Trig Level/Interval settings screen is shown to enable adjustment of these settings prior to start recording. Once again, the Input Gain should be adjusted to keep the dB indicator below its maximum reading. The Trigger Level should be set to make the detector trigger (start recording) at the desired signal level. As an aid to do that, “*” flashes on the row labelled “TRIG LEV” each time the input signal level reaches or exceeds the trigger level. The “Interval” settings determines the minimum time between successive recordings. This can be used to avoid filling the card too fast in locations with very high activity. To accept the settings, press ENTER and the detector will begin waiting for a signal. Each time a sufficiently loud signal appears, a recording will be made. To save power and increase battery life time, the detector is put in a low-power “sleep mode” while waiting for a signal (this is possible only as long as no pre-trigger is used). To exit the automatic recording mode, press the ON/OFF key briefly once while the detector is waiting and then press/hold the ON/OFF key until the display indicates that the detector is awake.

Changing the settings

Press the F1 key to enter the Settings menu. The settings are grouped into the following:

1 – USER PROFILES
2 – RECORDING SETTINGS
3 – TIMER ON/OFF
4 – DATE AND TIME
5 – DISPLAY
6 – UTILITIES

To select one of the categories above, move the highlighted section to the desired category using the up/down arrow keys and press ENTER.

When the detector is turned off, it saves all of the current settings so the next time it is turned on it will use the same settings.

USER PROFILES

Each "profile" contains the following parameters (the notations in the User Profiles menu and Profile select display are shown in parenthesis):

Sampling frequency (SAMP.FREQ./f): 44.1 kHz, 300 kHz or 500 kHz
Pre-trigger time (PRETRIG/PRE): OFF, 0.1, 0.3, 0.5 or 1 sec
Recording length (REC.LEN./LEN): 0.3, 0.5, 1, 2, 3, 5, 10, 20 sec or Manual
HP filter (HP-FILTER/HP): ON/OFF
Autorec (AUTOREC/A): YES/NO
Trigger source (T.SOURCE/SRC)
Trigger sensitivity (T.SENS/TS): Very high/0, High/1, Medium/2, Low/3, Very low/4

Switching between different profiles is an easy and fast way to change the settings. The D500X has ten fixed profiles and ten "user profiles". To select which one of the 20 profiles to use, press ENTER while the display shows the "READY" screen and use the left/right arrow keys to select the desired profile. Press ENTER again to confirm the selection.

The use of the different parameters is described in more detail in the sections "Using the D500X for automatic/manual recording".

To edit one of the user profiles, select USER PROFILES from the F1 menu and then select the desired profile, e.g. "USER0" using the arrow keys and press ENTER to enter the edit mode. The highlighted parameter is changed with the left/right arrow keys. To move to the next parameter, press the down arrow key. To accept and save the settings, press ENTER and the detector will return to the main screen.

If Recording Length "Manual" is chosen, the recording will continue until the REC button is pressed a second time. However, the recording time is limited to 1 hour in this recording mode.

The high-pass (HP) filter attenuates low-frequency signals and should usually be used (ON). It starts cutting off at around 20 kHz. To record signals with a frequency below ca. 15 kHz, set the filter to OFF.

The trigger sensitivity (T SENS in the User Profiles menu) - not to be confused with the trigger level – determines the requirements for the duration of the signal in order for triggering the detector. To make the detector start recording for minimum signal duration and level, set the trigger sensitivity to VERY HIGH and the trigger level to a low value. The trigger level is set in the Recording settings menu.

The trigger source is normally the sound from the microphone and this is currently the only alternative in the profiles. The external trigger signal is activated through a link in the plug connected to the External Trig input jack.

RECORDING SETTINGS

The parameters in the recording settings menu are:

Input gain (volume)
Trigger level
Minimum time interval to the next recording

The highlighted parameter is changed with the left/right arrow keys. To move to the next parameter, press the down arrow key. To accept and save the settings, press ENTER and the detector will return to the main screen.

The input gain should be adjusted to keep the recording level (as shown on the dB indicator) below the limit.

The trigger level should be adjusted to make the detector trigger (start recording) at the desired level. To aid this adjustment, the text "*" flashes during the setup process each time the detector is triggered.

The (minimum) time interval between successive recordings is determined by the Interval parameter. It takes the values 0, 5, 10, 15,….., 55, 60 seconds. Using a value greater than 0 means that at least the chosen time interval will have to elapse before the next recording is made, thus avoiding that the CF cards are filled excessively fast in situations with high sound activity. The actual minimum time between recordings may differ somewhat from the entered value, since there are variations in the time it takes to open and close files depending on the number of files on the CF card.

TIMER ON/OFF

The D500X has a timer that is used to turn off the detector for parts of the day, e.g. during daytime. This will save battery power. Up to four on and off times can be entered.

When the TIMER ON/OFF settings mode is entered, a list of the four timer on/off times is shown. If one or more of the timers are disabled, "--:--" is shown as the time. To enable a disabled timer, highlight the timer and press the ON/OFF key. The time will change from

"--:--" to "00:00". Press ENTER to change the time. Use the left/right arrow keys to move between hour/minute and the up/down keys to change the value. To accept and save the changes, press ENTER. If more than one timer is chosen, the time intervals of different timers must not overlap.

The text WAITING will be shown on the display while the detector is asleep in an automatic recording session (if the display is enabled).

DATE AND TIME

To change the date and time, use the left/right arrow keys to change the value and the up/down keys to move between the different items (year, month….). Press ENTER to save the changes and return to the main menu.

DISPLAY

The following parameters are available in this menu:

MODE
TIMEOUT
BRIGHTNESS

The MODE parameter determines in which situations the display is on. When the detector is left unattended, there is no need to have the display on at all, while in other situations it may be better to keep the display on at all times. The following values are available, ON, OFF, AUTO (the display is turned off while the detector is asleep) and DIMMED (the display is dimmed while the detector is asleep).

The TIMEOUT parameter determines the time that the display remains on after being temporarily turned on with the ON/OFF key while the detector is in the sleep mode.

The BRIGHTNESS parameter determines the brightness of the display (00 = weakest, 255 = brightest).

Use up/down arrow keys to move between the parameter and the left/right arrow keys to change the value.

Press enter to save and return to the main menu.

UTILITIES

The following commands are available in this menu:

SHOW CF PROPERTIES
SHOW CF TIMING
FORMAT CF CARD

SHOW CF PROPERTIES will read and display the CF card type/firmware and serial number.

SHOW CF TIMING will measure and display the following power-on time, read time and write time of the CF card. Numbers are expressed in milliseconds. This command is intended for advanced users, mainly for troubleshooting purposes.

FORMAT CF CARD will format the CF card in slot 1 in the FAT32 format. Please note that formatting a card permanently erases all files on the card.

Service modes

If the ESC or REC key is pressed/held as the D500X is powered on, the unit will enter special service modes. **These modes should only be used by qualified service personnel.** Entering these modes may change the performance of the detector. If you have inadvertently entered any of these modes, turn the detector off with the Power switch. The warranty does not cover any problems arising from unauthorized use of these service modes.

Formatting a CF card

The D500X expects the CF cards to have a FAT32 file system with (at least) one partition. If you are unsure about this, insert the CF card into a card reader connected to your computer, open Windows Explorer and right-click on the drive containing the CF card. Select "Properties" from the menu and check that "File system: FAT32" is shown.

To format a CF card, open Windows Explorer and right-click on the drive containing the CF card. Select "Format" from the menu and select File System FAT32. You can also enter a name for the Volume Label to describe the card.

From firmware version 2.1.3 and up, a CF card can also be formatted in slot 1 of the D500X. The format a card this way, select the UTILITIES alternative in the F1 menu and then FORMAT CF CARD.

Before starting a new recording session, the CF card should be formatted in a Windows PC, selecting FAT32 as file system, or in the D500X. This will erase any files on the card.

Important! **D500X firmware version 1 used a different method to store the files on the CF cards, requiring the CF cards to first be "prepared" using the D500X Utility program. The preparation stage has been eliminated in firmware version 2, so this version only requires that the CF cards used have been FAT32 formatted as described above. Cards to be used with firmware version 2 *must not* be "prepared". A prepared CF card will appear to have no space left to the D500X.**

CF card precautions.

Always follow the instructions supplied with the CF card and any CF card reader you are using. To read files from the CF card in your PC using a USB card reader, insert the card in the reader and then plug the USB connector into a USB port of the computer. To remove the CF card from the computer, use the Safely Remove Hardware application, if the Safely Remove Hardware icon appears in the notification area on the computer screen (click on the icon and follow the instructions).

Make sure the D500X is turned off using the INT/EXT Power switch before you insert a CF card into the CF card slot or remove a CF card from the slot.

Never switch the power off while the D500X is accessing the CF card, i.e. while recording, playing or formatting the CF card. Doing so can cause loss of recorded files and/or corruption of the CF card. Make sure that the text "READY" appears on the display before switching the power off.

Before inserting a CF card into the D500X, check that the pins of the CF card holder are not bent or have other defects. When inserting a CF card into the D500X, make sure that the card is oriented correctly. Make sure that the correct side of the card is facing up and that you insert the correct side of the card into the detector. Damage to the CF card holder of the D500X resulting from any of the above conditions is not covered by the warranty.

Static electricity, electromagnetic radiation and other electrical phenomena can cause corruption or loss of data stored on the CF card. For this reason, you should always make backup copies of important sound files on other media such as computer hard disk or CD.

CF card problems can usually be corrected by formatting the card. Formatting a CF card deletes all information stored on the card, including sound files and profiles. Before formatting a card you should copy all files you wish to keep on other media. If you plan to use the D500X where you don't have access to other storage devices, it is a good idea to take along a few extra CF cards just in case you experience an unexpected CF card problem.

Formatting is recommended for any CF card that you suspect contains corrupted files or for newly purchased CF cards.

***Caution.** Formatting a storage medium erases all data previously stored. Make sure you don't inadvertently format a card or other storage device that contains data you wish to retain!*

Using more than one CF card

The D500X can use up to four CF cards. The first card must be located in slot #1 and the next in slot #2 etc. The CF card indicator on the display shows the remaining total space on all of the cards. When the unit is set up for an automatic (level-triggered) recording session, all the CF cards should be newly formatted (i.e. not contain any previous recordings).

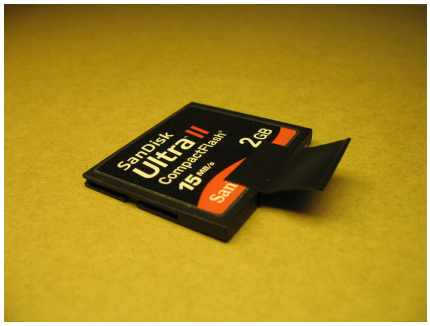
The switching between cards is made automatically. When the remaining space on the current card is not enough to make another recording with the current settings (sampling frequency, file length) and the unit is used in the automatic (level-triggered) recording mode, it switches to the next card and makes the next recording there. If the detector is used in the manual recording mode, it is not always possible to know the recording length on beforehand. In this case, the unit switches to the next available CF card if there is less space than 10 seconds at the chosen sampling frequency. This means that if the remaining recording time is e.g. 15 seconds and you attempt to make a recording of 20 seconds, this recording will be interrupted.

The active CF card (the card currently used to make recordings to) is shown on the display before the file name. The remaining space on the active CF card is shown after the file name.

Choosing CF card type

Sandisk CF cards should be used. We have successfully tested Sandisk Ultra II and Extreme III cards in sizes up to 32 GB.

In order to make it easier to remove a CF card from the D500X, a small "handle" can be made with a piece of tape (see the picture).



Using the D500X for automatic recording

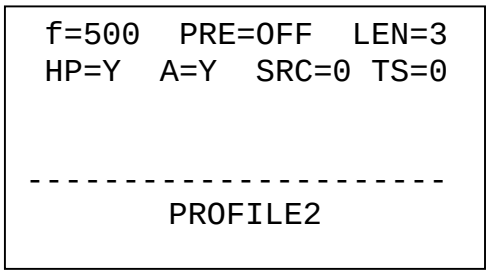
To set up the D500X for automatic recording, start with the display in the standard mode, showing “READY” and then follow the steps below. Steps 1-4 can be skipped if the settings do not need to be changed.

1. Check that the date and time are correct. If not, change it in the DATE AND TIME menu accessible by first pressing the F1 key. Press ENTER to accept the settings.

2. Set the desired Timer ON/OFF time(s) by pressing F1 and selecting “TIMER ON/OFF”. Entering 21:00 as ON time and 03:00 as OFF time will make the detector active between 21:00 (9 pm) and 03:00 (3 am). During other hours, the detector will be asleep and will not respond to any sound. Please refer to the section “Changing the settings” for detailed information about the timers. Press ENTER to accept the settings.

3. Press F1 and set the display operating mode in the DISPLAY menu. The recommended modes for automatic recording are OFF or AUTO. OFF will keep the display off during the entire recording session to save power. AUTO will keep the display off while the detector is waiting for a sound and on while recording. To turn on the display momentarily when it is off, press the ON/OFF key briefly.

4. Press ENTER to display the current profile settings. If necessary, change the active profile by pressing the LEFT/RIGHT ARROW keys. If e.g. PROFILE2 is selected, the display will show:



This means that the settings are:

f=500	Sampling frequency: 500 kHz
PRE=OFF	Pre-trigger: off
LEN=3	Recording length for each file: 3 seconds
HP=Y	High-pass filter enabled
A=Y	Autorecording enabled
SRC=0	The trigger source is the signal
TS=0	The “trigger sensitivity” is very high

More information on these parameters can be found in the section “Changing the settings”.

In order to use the automatic recording mode, the profile must have “A=Y” (Autorecording enabled).

Press ENTER again, to confirm selecting the displayed profile.

5. To start the recording session, press the REC key. This will first invoke the Recording Settings menu. Use the up/down arrow keys to change the parameter and the left/right arrow keys to change the values, if desired.

The input gain should be adjusted to keep the recording level (as shown on the dB indicator) below the limit.

The trigger level should be adjusted to make the detector trigger (start recording) at the desired level. To aid this adjustment, the text “*” flashes during the setup process each time the detector is triggered.

The Interval setting determines the (approximate) minimum time between successive recordings.

Press ENTER to accept the recording settings. This will make the detector enter the automatic recording mode. The REC and ON indicators will flash once every 5 seconds while the unit is waiting for a sound. During the “Interval” time (the minimum time between successive recordings), the indicators will flash once every second. The detector will of course not respond to any sound as long as the current time is outside of the timer ON/OFF interval.

6. To end the recording session, wake the detector up by first momentarily pressing the ON/OFF key and then pressing/holding it for a few seconds. This puts the unit in the standard mode, showing “READY” on the display. If a recording is in process, it should first be interrupted with the ESC key. When the display shows “READY”, the power can be turned off with the main power switch. Never turn the unit off with the Power switch while the detector is accessing the CF card (reading and/or writing)!

The D500X can be used to make recordings either with or without pre-trig (the recording starts before the trigger occurred). Using the detector without pre-trig (“PRE=OFF”, the recording starts as a sound triggers it) makes the detector use much less power while waiting for a sound and is the recommended mode for long battery life time.

For unattended recording, the recording length should not be set to “MAN” since this requires manually pressing the REC key to interrupt the recording.

Using the D500X for manual recording

To set up the D500X for manual recording, select a profile with “AUTOREC = NO” (A = N). To start recording, press the REC key. If a profile without pre-trig (“PRE=OFF”) is used, a recording of the chosen length (e.g. 3 seconds if “LEN=3” was chosen) will be made. If “LEN=MAN” was chosen in the profile, press the REC key a second time to interrupt the recording.

If a profile with pre-trig (e.g. “PRE=1”) is used, press the REC key to start recording. The text “BUFFERING” will be displayed until the pre-trig time has elapsed in order to fill the memory buffer. In order to stop the recording, press the REC key again. The recording will continue to make the total recording time equal to the chosen “LEN” value and then stop.

File management

After a recording session, the recorded files are usually transferred to another medium, e.g. the hard disk of a computer, for storage and/or analysis. In order to use the same CF card for new recordings with the D500X, the card should be formatted in Windows (as FAT32). This will erase all files from the CF card.

The files are “wav” files that can be used by most sound editing software. However, due to the high sampling frequency, the files usually cannot be replayed by common sound cards. Using special software, such as BatSound, playback at slower speed is possible with any sound card.

The maximum number of files for a certain recording session (using 1-4 CF cards) is 64000.

File metadata

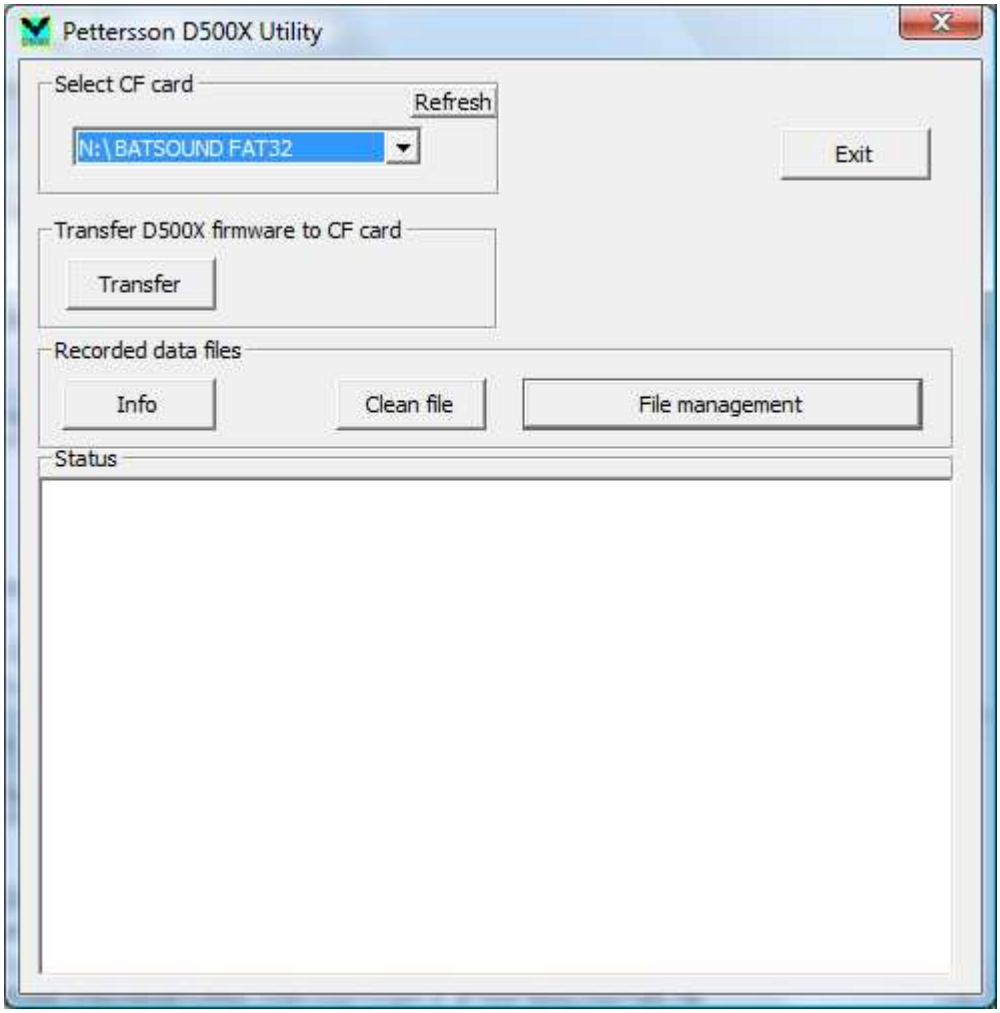
The sound files also contain metadata, such as original file name, date and time, firmware version, recording profile settings and an identification number. For units that come with firmware version 2.1.1 (or higher) installed, the identification number is the serial number of the detector by default. The metadata (or parts of it) can be retrieved by the D500X Utility program and the BatSound program.

Users upgrading to firmware version 2.1.1 may wish to update the identification number, to make the desired number (e.g. serial number) appear in the metadata of the files. Please contact Pettersson for information about this.

The D500X Utility

The D500X Utility software is a Windows program to facilitate the use of the CF cards with the D500X. This program can be found on the CF card that comes with the detector. Copy it to a suitable folder on the hard disk of the computer and double-click it to run it. It is used to:

- Extract metadata from D500X files (file date/time, firmware version etc.)
- Copy and rename files with optional adding of date/time/prefix/suffix to the file name
- Transfer D500X firmware upgrade files to a CF card



The first step in using the D500X Utility is to select the drive that has the CF card. This is done in the “Select CF card” section in the D500X Utility main window. Please make sure you select the correct drive or the following operations (including formatting) will be performed on a disk in a drive you did not intend.

You should close any other application (e.g. Windows Explorer) using the CF card or the D500X Utility program may not be able to access the card.

Transfer D500X firmware to CF card

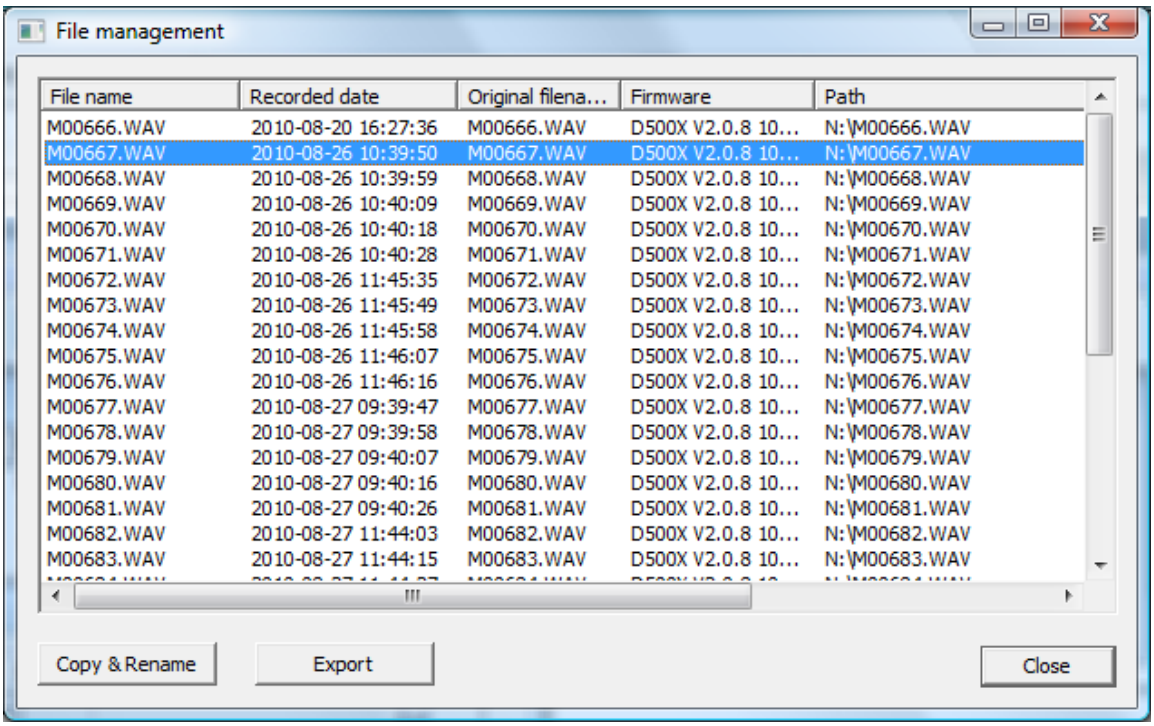
This selection transfers a firmware upgrade file from the PC to the CF card in order to upgrade the D500X firmware through a special procedure. Firmware upgrades are supplied by Pettersson as they become available. The upgrade file should have the extension ".D500X". To upgrade, the firmware file should be transferred to the CF card using the Transfer function of the D500X Utility program (copying the upgrade file to the CF card through Windows will not work). Then put the card in slot #1 of the D500X and turn the power on with the EXT/INT Power switch. The detector will automatically recognize the card as a "firmware upgrade" card. Follow the instructions on the display to perform the upgrade.

Recorded data files

The *Info* command will display metadata from the selected file (file name, date/time and firmware version).

The *Clean file* command will remove the extra information that is stored in the file. This information is stored at the beginning of the file and can be seen in the spectrogram or oscillogram as a very short transient. Usually, this transient is so short that it is not noticed. Please note that after using the Clean file command, the information erased from the file cannot be retrieved, so it is advisable to perform this operation on a copy of the original file.

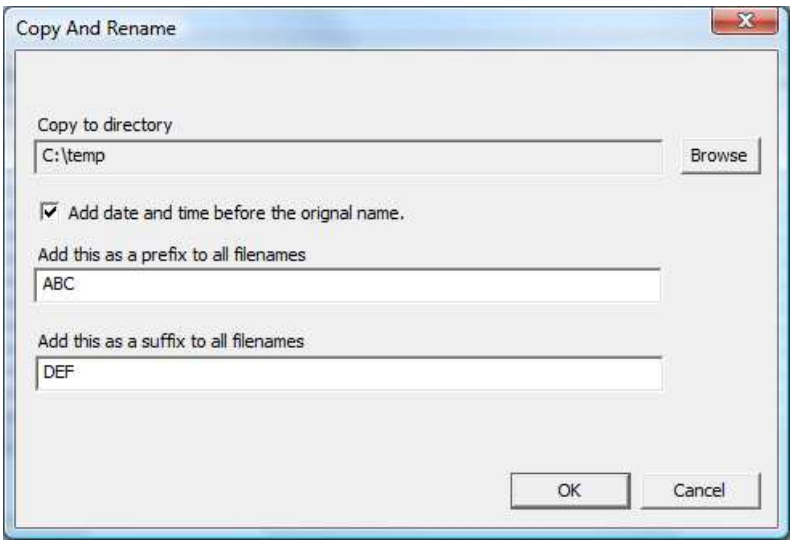
The *File management* command opens the File Management dialog box which gives a list of the D500X files in the selected drive/folder with the embedded file information:



The information in the File Management list can be exported to a tab separated text file ("Export"). Select the desired information to export by first highlighting it. It is also possible to press Ctrl-C to copy the highlighted section to the Windows clipboard.

The Copy & Rename function is used to copy one or more D500X files from the CF card to the computer's hard disk. Optionally the files can also be renamed. The Rename function can also be used to add the time and date to the original file name. A user defined prefix and/or suffix can be added to the original file name. Selecting multiple files, will create copies of all files with time/date, prefix and suffix added. This is useful to add identification information (e.g. recording location) to a group of files.

As an example, if the settings showed below are applied to the file M00667.WAV above, this will result in a copy of the file to the file ABC2010-08-26_10_39_50_M00667DEF.WAV in the C:/temp folder.

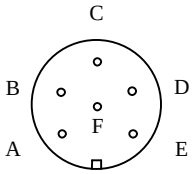


NOTE: Older versions of the D500X Utility also have the "Format and prepare" command. This should only be used with D500Xs running firmware version 1. **Do not use the "Format and prepare" function on CF cards to be used with D500X firmware version 2 or higher!**

Connecting external accessories to the D500X

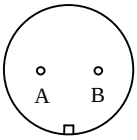
Cables for connecting external devices to the D500X are available from Pettersson. The connector type is Switchcraft EN3. The illustrations below show the connectors as viewed from the outside of the D500X housing. In order to maintain water protection when not mated, the protection cap must be in position over each connector.

External microphone



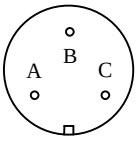
A – Reserved
B – Ground
C – Differential signal input (+)
D – Differential signal input (-)
E – Power output from detector (+3.3V)
F – External mic select input (tie to pin B on plug to enable ext mic)

External batteries



A – Ground terminal (-)
B – Positive terminal (+), recommended voltage 4.5 – 8V

External trigger signal



A – Trigger input (triggers on “low” level, voltage range 0-3.3V)
B – Ground
C – External trig select input (tie to pin B on plug to enable external trig)

The applied voltage at the trigger input must be within 0 to +3.3V relative to ground. No voltage may be applied to the trigger input while the detector is powered off or damage to the detector may result.

Weather protection

The D500X comes in an enclosure which is weather protected in the meaning that it will withstand dust and a certain degree of humidity. Heavy rain may result in water intrusion, so under such conditions additional protection is recommended. The protection cover over the CF card holders and power switch should be used for mechanical and weather protection.

The built-in microphone is sensitive to humidity and should always be protected from rain etc.

System requirements

In order to format and prepare the CF cards for use with the D500X as well as to access the recorded files, a PC with Windows XP-SP3/Vista/7 and a CF card reader are required.